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Agriculture and Sustainable Development

Agriculture in India is more than 4000 years, and most of the problems we face today have emerged in the last few decades. Never in the history of agriculture have such a large number of farmers looked on passively as their daughters being trafficked; their ilk is forced sell human organs and a large number of fellow farmers are committing suicide. We need to look at this issue from an historical perspective.

A major change took place 300 years ago. The advent of colonisation sowed the seeds of globalization. International markets and trade dictated a change in land use and dismantled the land use pattern that had evolved over 4000 years old. Colonization led to large-scale deforestation and re-plantation with commercial crops mainly tea, coffee, coco, spices and tobacco and these products were fed into European market. These crops grew at different elevations on the mountains. Then, came the reforestation for planting rubber and sugarcane to fulfill the demands of the automobile, chocolate and alcohol industry.

The tropical forest is a forest that grows at different levels. Below these trees, were shrubs, herbs and grasses. Deforestation and subsequent reforesting of mono-species and shrubs triggered high erosion on the mountain. The deforestation on the mountain activated silting of rivers and wild streams and this has led to a drastic change in land use on the plains.

Change in food production patterns

India is a country with a diverse food consumption pattern, with almost 80 per cent of the population living on minor millets and pulses. In the last 50 years, thanks to the Green Revolution, there has been a major shift with a major part of the population consuming wheat and rice. These are high water utilizing, high fertilizer responsive, and high solar utilizing varieties.

Now, this major shift from millets to wheat and from millets to rice has led to deforestation in the plains. Millets and pulses, grew under agro forestry system

that is unsuitable for rice and wheat. The advent of green revolution, and the construction of big dams, state's subsidy for fertilizers, electricity, and for fertilizer responsive varieties led to large scale research in high fertilizer prone and short duration varieties. In the same piece of land, three crops were cultivated per year, leading to a high exploitation of ground water and high utilization of nitrogen fertilizers. This gave birth to the emergence of pests and diseases.

Take a look at what happened in Punjab, the wheat bowl of India, and Tamil Nadu, the rice bowl, the most fertile lands in this country. Through consecutive ploughing and flooding of fields there has been a sharp increase in the precipitation of salts to the surface; the use of heavy tractors--- from 10 HP tractors to 50 HP--- has led to compaction of the soil. Combinedly, this has resulted in thousands of hectares of land becoming saline and water logged and the land has been rendered dead.

This process has gradually led to the destruction of the microbial population in the soil and the destruction of soil health. In turn this has led to a decline in healthy crops; resulting in an increase in pest and diseases; and consequently, a decline in production. Those states, districts, blocks and villages which adopted large scale fertilizer responsive, high water utilizing crops are seeing devastations by pest and diseases. Desertification is now taking place in these pockets.

Classification of shrub forest as non-economic

In early 1960s, the shrub forests in the country were classified as non-economic forests. These forests had been cut down and in the name of social forestry and shrub forests were replanted with Eucalyptus and Acacia to feed the pulp, rayon and the paper industry.

Here we need to re look at the process of desertification and its economics. Now, the state revenue from the shrub forest is small. The trees in the shrub forest are of low timber value. But, these shrub forests fed the community around them, with green manure for their fields; herbs for the community health; edible green leaves, fodder for their cattle, and so on. With the classification of shrub forests as non-economic, these vanished and were replaced with Eucalyptus. Now, with the decrease of green manure, soil fertility depeleted; with the decrease in fodder, cattle population declined and also so did farm yard manure; with the decrease in (medicinal) herbs, the community became dependent on allopathic medicine. The planting of Eucalyptus has further activated the process of erosion.

Dismantling of traditional water storage systems

The silt from the forests filled the tanks and lakes. These tanks and lakes, which are more than 1000 years old, were established before modern implements were invented. Over the last 50 years, the storage capacity of these tanks has shrunk little by little and is now less than half of their original capacity. These community tanks were historically maintained by the community that annually de-silted thems

and transferred the silt to its agricultural lands. Now the public works department (PWD) has taken over the management of these tanks and people are not allowed to de-silt them. This has further led to the depletion of ground water. Ground water depleted from 10 meters in 1980 to 300 meters in 2007.

Pest resurgence and birth of GMO

The introduction of high solar utilizing varieties from the research stations further led to deforestation of trees on the fences and bunds on the farmland. The destruction of trees on the fences and bunds of the farmers' field, the destruction of the forest, mono-cropping led to the increase in pest and disease. Increase in dosage and indiscriminate use of chemical pesticide resulted in pest resurgence. The poisoned lands now needed a stronger dose of poison and the answer to this was genetically modified organisms (GMO). The farmer needs to ask, "Am I now producing food?" The consumer needs to ask, "Is my food safe?"

Community-dependence to capital-dependence

Before 1950s, the farmer hardly new what a pesticide was. Now, the farmer at an average spent about Rs.1,000-Rs.1,500 per acre and about Rs.2,500-Rs.3,500 per hectare for pesticides. The decline in green manure; the reduction in cattle population, and the decline in farmyard manure has further led to a reduction in soil fertility. Chemical fertilizers have substituted this gap. The increase in the use of fertilizers and pesticides has led to increase in the coffers of the multinational. Today, each panchayat in the country contributes between Rs.10-15 lakhs annually to the MNCs through seeds, fertilizers and pesticides it consumes.

High input agriculture and exploitative moneylender

Small farmers, predominantly, did not have capital to purchase seeds, fertilizers and pesticides. Nationalized financial institutions did not have adequate systems for providing loans to small farmers. Exploitative moneylenders utilized this situation and took away whatever remained from their lands.

The above situation is the consequence of globalization and industry-driven technologies. Sustainability cannot come if we continue in the same path. We need to look at a process that would focus on participatory technology development with a people-centred focus. From producing for the market we need to look at a path where farmers can first fulfill the need of their families and communities, and then value add and put into the market, the surplus.

Moneylenders, fertilizer input shops, and contract farming companies are now coming together. A process of monopolisation of land, water and biodiversity is taking place. Small farmers are at the mercy of these very powerful, ruthless, collective exploitative forces. Contract farming cannot contribute to sustainable development. For a contractor, his source of income is not farming alone. His sources of income are a variety of projects. Today, if his income is from farming,

if the water table is low and if soil life declines, he will switch over to mining – farmer and farming family will be of little concern to him.

Food security and food sovereignty

Food security can only come if every drop of water is harvested where it falls; if every piece of land is effectively used with an appropriate land use pattern; and if every farmer has the means to produce. Revival of traditional water bodies to store the surplus would contribute in enhancing his capacity to overcome drought.

Farmers should understand that when they use pesticides they are destroying not only predators on the field but community predators. Farmers should be aware that the predators belong to the community. Farmers should be aware that biodiversity is community's wealth. Farmers should be aware that all those exploiting groundwater, are exploiting community water resources. It is this process of community ownership facilitated by NGOs, NGO networks, farmers organisations, consumer organisations, social conscious research institutions which will determine sustainable development.

The state should

- Not subsidize fertilisers farmers who are conserving biodiversity by the planting trees on their fence and bund.
- Not subsidize the electricity but farmers who are adopting solar harvesting technologies by inter cropping cereals, pulses, shrubs and trees;
- Not subsidise high water utilising crops but farmers who are cultivating low water utilising crops like millets and pulses;
- Subsidise appropriate implements and machinery for value addition at the panchayat level.

Several of the alternatives that are emerging need to be up scaled: Re-establish farm ecology; establish community seed banks; conservation of every drop of water; community control of ground water; community grain banks; conservation of community biodiversity; value addition to agriculture produce; pesticide-free villages; bio villages, and self sufficient, self reliant and socially just communities.

The LEISA Network in the last 25 years has been involved with 82 NGOs and 50,000 farmers. There are organic farmers all over the state ; all over the country, and all over the world. The state and the research institutions, international donor organizations should identify emerging sustainable alternatives and evolve strategies of up scaling these alternatives. It is not enough to establish these alternatives in the fields of a few farmers. They should be adopted in fields of resource poor farmers. Depletion of ground water should be reversed. Pesticide free villages, bio villages, self sufficient, self reliant and socially just rural communities have to be re-established. Future farming food security and food sovereignty can only be

achieved if we make an attempt to establish bio villages in a few bio panchayats in each block of this country.

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